[19]中华人民共和国国家知识产权局

[51]Int. Cl[7]
G06K 9/62

[12]实用新型专利说明书

[21] ZL 专利号 00233438.0

[45]授权公告日 2001 年 2 月 28 日

[11]授权公告号 CN 2421695Y

[22]申请日 2000.5.16 [24]颁证日 2001.1.20

[73]专利权人 倬茂企业股份有限公司
地址 台湾省台北县
[72]设计人 黄锦荣

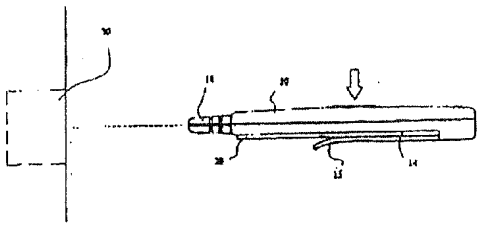
[21]申请号 00233438.0
[74]专利代理机构 北京三友专利代理有限责任公司
代理人 李 强

权利要求书 1 页 说明书 4 页 附图页数 3 页

[54]实用新型名称 感应卡长距离发射器的结构

[57]摘要

一种感应卡长距离发射器的结构，尤指一种可携带式的长距离发射器，可将原有的感应卡夹固于发射器的一侧，在接通电源后会发射一特定频率的无线电波给感应卡，而感应卡内部的集成电路 IC 就将识别码送出，发射器接收到识别码的同时，载入另一较高频率的射频电波将原识别码发射出去，使位于较远距离(门口)的接收器(读卡机)能够收到该感应卡的识别码，即可启动门禁系统。



ISSN1008-4274

权 利 要 求 书

1、一种感应卡长距离发射器的结构，为可携带式的长距离发射器，其特征在于：其壳体内部包含长距离发射单元、短距离接收单元及短距离发射单元，在壳体的外部可与一感应卡作结合；其中在一侧设有电源，该电源经一开关与上述长距离发射单元、短距离接收单元及短距离发射单元相连通；在按下电源开关，可使短距离发射单元发射一特定频率的无线电波给感应卡，而感应卡内部的集成电路 IC 就将识别码送出，发射器的短距离接收单元收到识别码后，同时载入另一较高频率的射频电波由长距离发射单元射出，使位于门禁系统的读卡机可在长距离外收到该感应卡的识别码而启动门禁系统。

2、如权利要求 1 所述的感应卡长距离发射器的结构，其特征在于：其中在电路上可增设一发射天线。

3、如权利要求 1 所述的感应卡长距离发射器的结构，其特征在于：其中该发射器壳体上可设有一凹入的置卡槽，另外，在置卡槽边缘处向内延伸设有一弹性夹片来固定感应卡。

说　明　书

感应卡长距离发射器的结构

本实用新型涉及一种感应卡长距离发射器的结构，该长距离发射器为小巧而可携带式，在原有仅能使用在短距离门禁系统的感应卡夹置一侧，配合长距离接收频率的读卡机即可作为长距离遥控使用，可使原短距离接收系统具有长距离遥控系统的效能；即不需要另购整个不同系统的长距离门禁系统，相对使各场所门禁规格统一、方便管理，且可免除一人携带多张不同感应卡的困扰。

一般在管制车辆（或人员）出入的场合，例如：停车场或办公大楼等，多半设有门禁管制系统，该管制系统具有中央监控的功能，分别给予诸位特定人士（例如员工或会员）一张能开启门禁的感应卡，该感应卡于内部镶埋设有集成电路 IC 芯片，其中设有特别的识别码，则车辆（或人员）行至管制出入口处，将感应卡置于内有接收器的读卡机前方（约三十厘米以内）供判读及记录（时间、人员），若卡号无误，则管制门开启而可进入、外出。

然而，上述传统的结构并未有良好的设计，故在实施上具有如下的几项缺点：1、由于读卡机设于门口，并能放射出一定距离的感应电磁波，而持有感应卡者必须步行至适当位置（约距读卡机三十厘米前）接受电磁波，并发射出识别码供读卡机感应及判读，其原因是磁波发射的有效距离太短（注：电磁波强度与距离是三次方成反比），故使得一般使用者多需步行至读卡机前使用，在实施上较为不便，且浪费许多宝贵时间。

2、若干产品在读卡机上加大功率，期望使读卡机的电磁波增强，使其有效接收范围增加大约将近一米，但此种方式将使该读卡机长期辐射出较强的电波能量，对人体而言，可能会有不良的影响，况且即使是一米的有效距离，在某些场合（例如开车进入停车场）使用时，尚嫌太近，故实用性不佳。

3、一般近距离使用（如至办公室）的门禁管制尚可使用上述传统的模式，但如公司地下停车场则是使用甚不方便，但是若在地下停车场采用另一

种长距离的遥控开关，则在特定的场所使用两种不相容的系统，不但公司成本增加，而且，员工在使用时也要携带及使用不同的感应卡，实用上又有其不便之处。

本实用新型的主要目的是提供设计一种能够改进传统产品缺点的携带式感应卡长距离发射器的结构，其是将原有的感应卡夹置其一侧，当启动发射器开关后，立即发射一特定频率的无线电波给感应卡，而感应卡内部的集成电路 IC 就将识别码送出，发射器接收到识别码同时载入另一较高频率的射频电波发射出去，即能使远距离接收的读卡机读到该识别码而启动门禁系统。

本实用新型是这样实现的：其为可携带式的长距离发射器，其特征在于：其壳体内部包含长距离发射单元、短距离接收单元及短距离发射单元，在壳体的外部可与一感应卡作结合；其中在一侧设有电源，该电源经一开关与上述长距离发射单元、短距离接收单元及短距离发射单元相连通；在按下电源开关，可使短距离发射单元发射一特定频率的无线电波给感应卡，而感应卡内部的集成电路 IC 就将识别码送出，发射器的短距离接收单元收到识别码后，同时载入另一较高频率的射频电波由长距离发射单元射出，使位于门禁系统的读卡机可在长距离外收到该感应卡的识别码而启动门禁系统。

其中在电路上可增设一发射天线。

其中该发射器壳体上可设有一凹入的置卡槽，另外，在置卡槽边缘处向内延伸设有一弹性夹片来固定感应卡。

下面配合附图详细说明本实用新型的结构、特征及功效。

图 1 为本实用新型的功能方块图。

图 2 为本实用新型与感应卡的结合实施例图。

图 3 为本实用新型的电路图。

请配合参看图 1、图 3 所示，本实用新型的长距离发射器 10 为一种小型可携带式的产品，其内部主要包含有长距离发射单元 11、短距离接收单

元 12 及短距离发射单元 13 等电子设备，在一侧设有供应的电源 18，经由一开关 17 与长距离发射单元 11、短距离接收单元 12 及短距离发射单元 13 等电路相连，并在电路长距离发射单元 11 处设有一发射天线 16，可使电波传送至更远；再请参看图 2 所示，该发射器 10 于壳体外部底侧设有一凹入的置卡槽 14、在置卡槽 14 边缘一侧向内侧延伸设有一弹性夹片 15，该弹性夹片 15 末端与置卡槽 14 底面相抵，用以夹固感应卡 20。

请配合参看图 1、图 2、图 3 所示，本实用新型在使用时，取原有的感应卡 20 置于发射器 10 的置卡槽 14 中，按下其电源开关 17，使其短距离发射单元 13 发射一特定频率的无线电波给感应卡 20，而感应卡 20 内部的集成电路 IC 就将识别码送出，发射器 10 的短距离接收单元 12 收到识别码后，同时载入另一较高频率的射频电波，由长距离发射单元 11 射出，既使是设置在较长距离（例如：10 米左右）的接收器 30（读卡机）仍可收到该感应卡 20 的识别码而启动门禁系统。

由于本实用新型具有特别的巧妙构思，故在使用上具有如下的优点：

1、本实用新型是使用无线电射频原理，只要用很低的发射功率就能轻易地将有效距离延长到 10 米以上，使用上更为方便且安全。

2、本实用新型采用直接读取感应卡的内码再转发射出去，因此保留原来集成电路 IC 密码无法复制的特点，是最直接、方便及节省成本的最佳实施方式。

3、使用本实用新型后，该原有的一短距离感应门禁系统，可作为长距离感应门禁系统使用，则原有的感应卡并不需要更换，且不论是在办公室或地下停车场等不同的场合都可使用同一套系统，在成本的购置上不造成负担；而在使用上，由于不必再另购置一套长距离感应门禁系统，使得员工仅使用同一张感应卡，配合本实用新型即可在各种场合使用，较传统方式更为方便。

4、本实用新型与感应卡结合的方式不受方向的限制，不论正、反、前或后都能使用，极为便利。

00.05.15

说 明 书 附 图

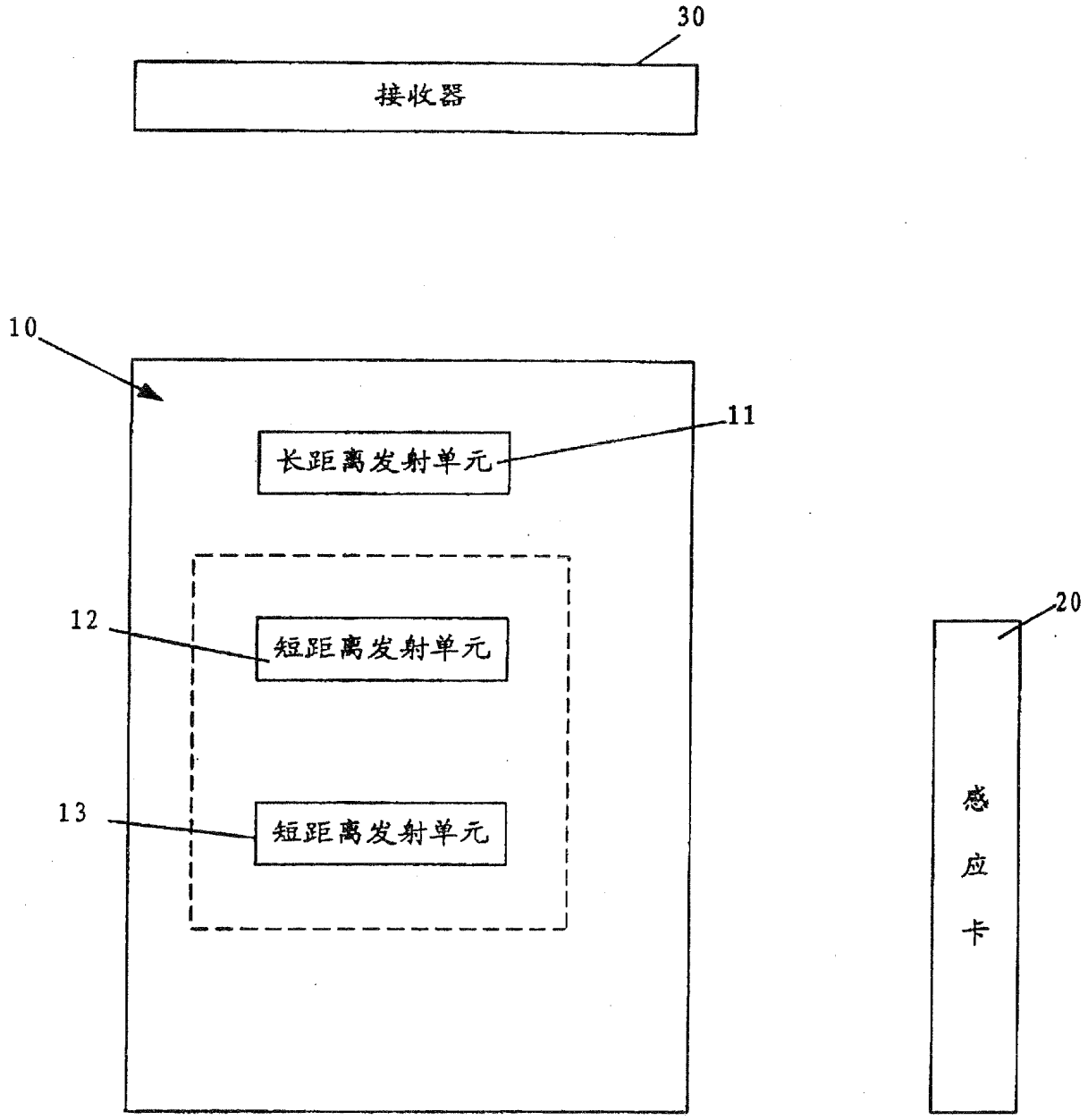


图 1

00-05-18

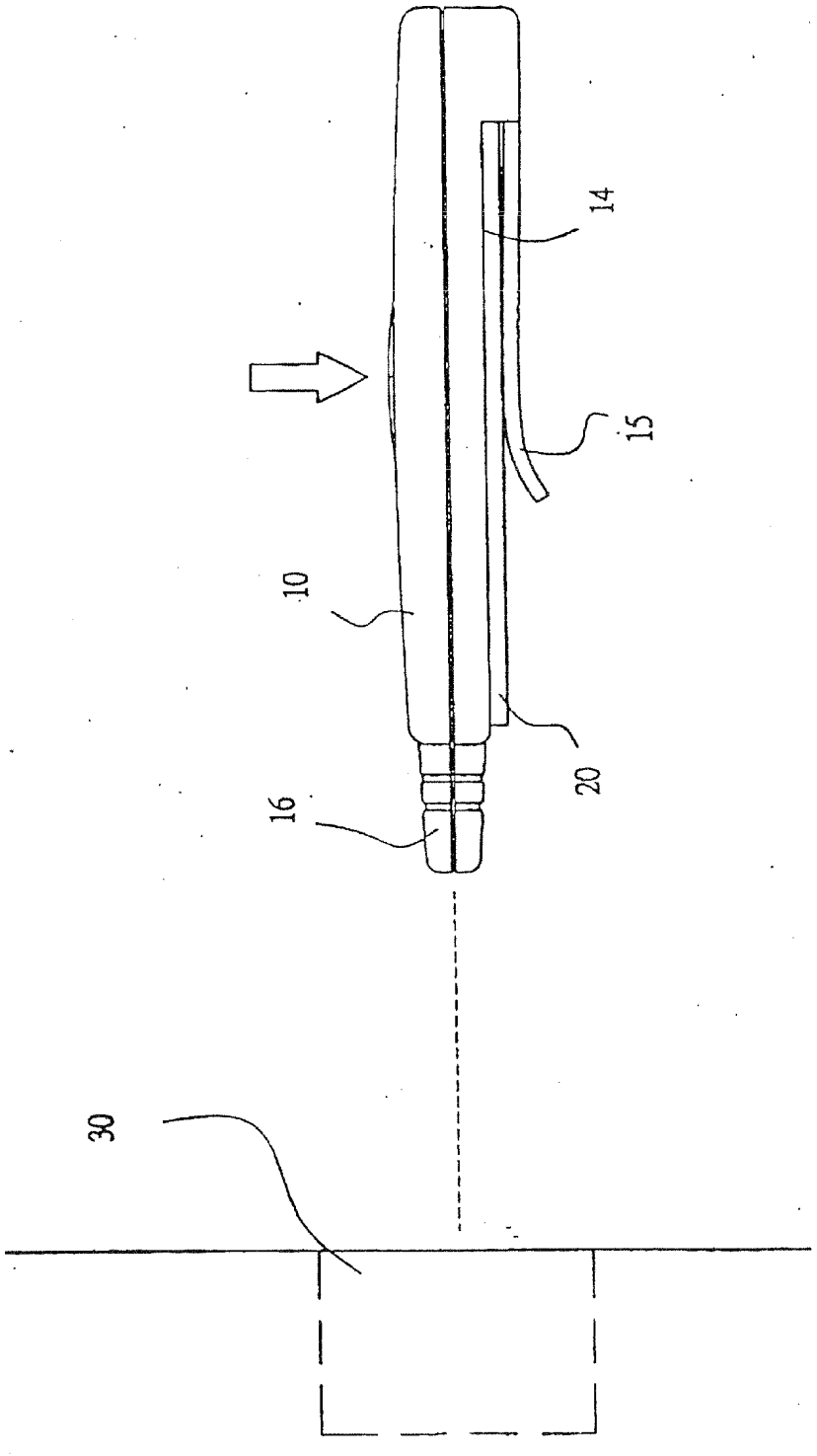


图 2

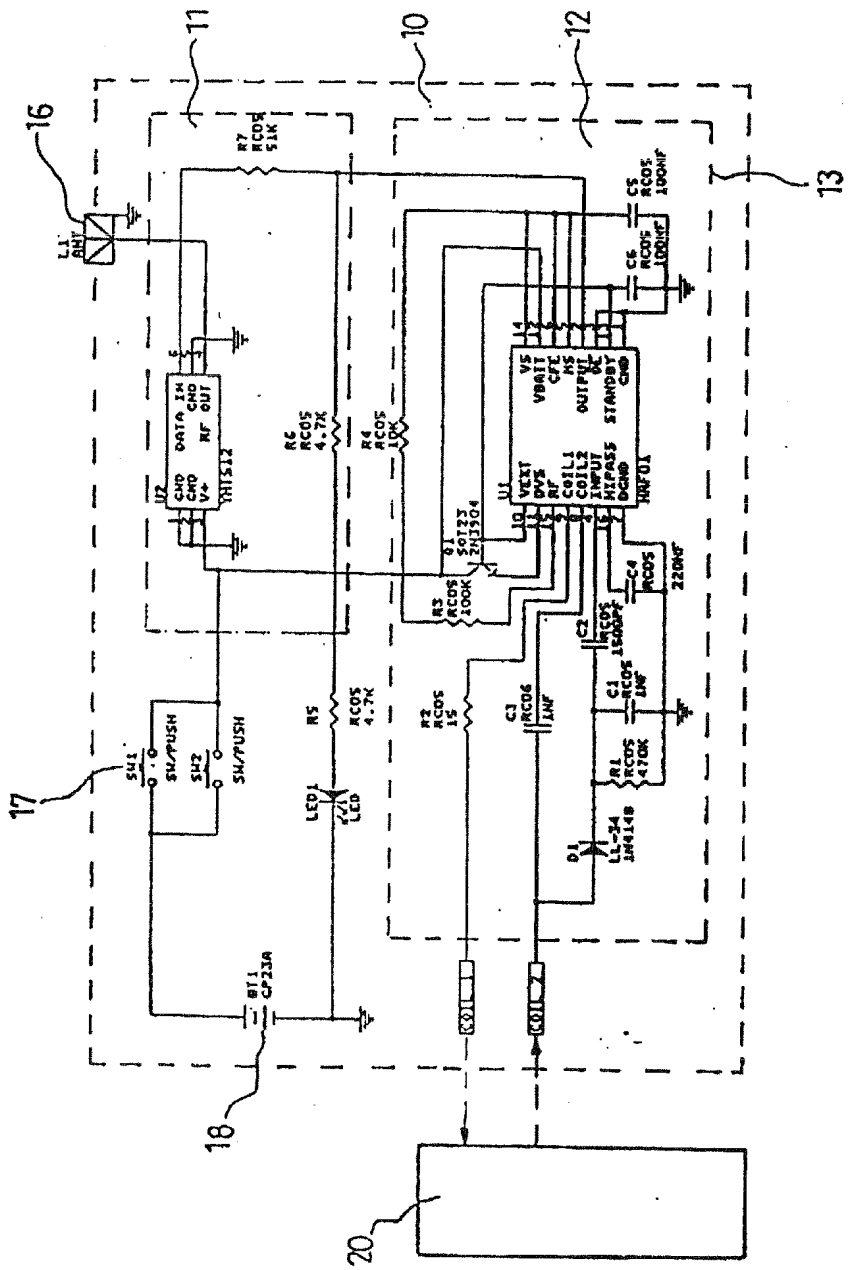

11
10
12
13
16
17
18
20
SW1
SW/PUSH
SW2
SW/PUSH
LED1
LED
BT1
CP23A
R1
RCOS
470K
R2
RCOS
15
R3
RCOS
100K
R4
RCOS
10K
R5
RCOS
4.7K
R6
RCOS
4.7K
R7
RCOS
51K
C1
RCOS
1NF
C2
RCOS
15PF
C3
RCOS
1NF
C4
RCOS
220NF
C5
RCOS
100NF
C6
RCOS
100NF
D1
LL-34
1N4148
Q1
SOT23
2N3904
U1
U2
HX1001
HMS12

图 3

CPEL0550911P

Reference 1

[Title]

Architecture of a sensing card long-distance transmitter

[Abstract]

For the architecture of a sensing card long-distance transmitter, in particular, a portable long-distance transmitter, an existing sensing card can be secured by clamping to one side of a transmitter. After turning on the power supply, a radio wave of a specific frequency would be transmitted to the sensing card, while the integrated circuit IC inside the sensing card will then send out an identification code. When the transmitter receives the identification code, it simultaneously carries in another radio frequency wave of a higher frequency to transmit the original identification code, to enable a receiver (card reader) located farther away (entrance) to receive the identification code of this sensing card, and the gate admission system can then be started.

[Claims]

1. The architecture of a sensing card long-distance transmitter, which is a portable long-distance transmitter, characterized in that: comprising inside its casing a ling-distance transmitting unit, a short-distance receiving unit and

short-distance transmitting unit, which can couple with a sensing card at the exterior of the casing; wherein a power supply is provided at one side, this power supply is connected via a switch with said long-distance transmitting unit, short-distance receiving unit and short-distance transmitting unit; upon pressing down the power supply switch, the short-distance transmitting unit is made to transmit a radio wave of a specific frequency to the sensing card, and the integrated circuit IC inside the sensing card then sends out an identification code, and after the short-distance receiving unit of the transmitter receives the identification code, a radio frequency wave of another higher frequency is simultaneously carries in, which is transmitted by the long-distance transmitting unit, enabling the card reader of a gate admission system to receive the identification code of this sensing card from a long distance and start the gate admission system.

2. The architecture of a sensing card long-distance transmitter as described in claim 1, characterized in that: wherein a transmission antenna can be additionally provided in the circuit.

3. The architecture of a sensing card long-distance transmitter as described in claim 1, characterized in that: wherein a caved-in card placement slot can be provided on the casing of this transmitter, and in addition, a spring clamp for securing the sensing card is provided extending inwards at the edge of the card placement slot.

[Description]

This utility model relates to the architecture of a sensing card long-distance transmitter. This long-distance transmitter is compact and portable, and a sensing card that originally can only be used in a short-distance gate admission system is clamped to one side. It can be used for long-distance remote control in cooperation with a card reader of long-distance reception frequency, making the original short-distance reception system have the function of long-distance remote control system. Namely, there is no need to separately purchase a whole log-distance admission system of a different system, which comparatively makes the admission standard at each location unified, easy to manage and removes the trouble for one person to carry multiple different sensing cards.

In general, in cases of restricted vehicle (or personnel) admission and exit, e.g., car parks or office buildings, etc., an admission system is most likely installed. This control system has the function of central monitoring. Each specific person (e.g., staff member or club member) is provided with a sensing card that can start the admission process. The interior of this sensing card is embedded with an integrated circuit IC chip, wherein specific identification code is provided, then when the vehicle (or personnel) comes to the place of admission control, the sensing card is placed in front (within about 30 cm) of a card reader with a receiver inside for reading and recording (time, personnel). It the card number is correct, then the control gate is opened and admission or

exit is allowed.

However, the aforesaid conventional architecture does not have a good design, and hence have in practice the several drawbacks as follows: 1. As the card reader is installed at the entrance, and can radiate electromagnetic wave for sensing to a certain distance, the sensing card holder must walk to a suitable position (approximately 30 cm in front of the card reader) to receive the electromagnetic wave and to transmit the identification code for the card reader to sense and judge. Its reason is that the effective distance of electromagnetic radiation is too short (note: the intensity of an electromagnetic wave is inversely proportional to the cube of distance). Hence, it makes generally the user have to walk in front of the card reader for use, which is comparatively inconvenient in practice and wastes a lot of valuable time.

2. Certain products increase the power on the card reader, expecting to increase the electromagnetic wave of the card reader, increasing its effective reception range to about 1 meter. However, this manner would make this card reader to radiate stronger electrical wave energy for a long term, which may have bad effects for human bodies. Moreover, even for an effective range of 1 meter, when used in certain cases (e.g., driving into a car park), it is still too short. Hence, it is not of high practicability.

3. In general, admission control of short distance use (such as office) can still use the aforesaid conventional model, but for, e.g., the underground car park of a company, then its use will be inconvenient. However, if another

long-distance remote switch is used in the underground car park, then using two incompatible systems at a specific location not only increases the cost of the company, but the personnel have to carry and use different sensing cards for use, which in practice has its own inconvenience.

The main object of this utility model is to provide architecture of a portable sensing card long-distance transmitter that can improve the drawbacks of conventional products. It places the original sensing card at its one side by clamping, and when the switch of the transmitter is turned on, it immediately transmits a radio wave of a specific frequency to the sensing card, and the integrated circuit IC inside the sensing card then sends out the identification code. The transmitter receives the identification code and at the same time carries in another radio frequency of another higher frequency to transmit it out, then it can make the card reader of a long-distance reception receive this identification code and start the admission system.

This utility model is implemented in this way: it is a portable long-distance transmitter, characterized in that: comprising inside its casing a ling-distance transmitting unit, a short-distance receiving unit and short-distance transmitting unit, which can couple with a sensing card at the exterior of the casing; wherein a power supply is provided at one side, this power supply is connected via a switch with said long-distance transmitting unit, short-distance receiving unit and short-distance transmitting unit; upon pressing down the power supply switch, the short-distance transmitting unit is made to transmit a radio wave of a

specific frequency to the sensing card, and the integrated circuit IC inside the sensing card then sends out an identification code, and after the short-distance receiving unit of the transmitter receives the identification code, a radio frequency wave of another higher frequency is simultaneously carries in, which is transmitted by the long-distance transmitting unit, enabling the card reader of a gate admission system to receive the identification code of this sensing card from a long distance and start the gate admission system.

Wherein a transmission antenna can be additionally provided in the circuit.

Wherein a caved-in card placement slot can be provided on the casing of this transmitter, and in addition, a spring clamp for securing the sensing card is provided extending inwards at the edge of the card placement slot.

The structure, characteristics and functions of this utility model will be described in detail below with reference to the figures.

Fig. 1 the functional block diagram of this utility model.

Fig. 2 the diagram of the embodiment for the combination of this utility model and a sensing card.

Fig. 3 The circuit diagram of this utility model.

With reference to Fig. 1 and Fig. 3, the long-distance transmitter 10 of this utility model is a compact portable product. Its interior mainly comprises electronic devices of long-distance transmitting unit 11, short-distance receiving unit 12 and short-distance transmitting unit 13, etc. On one side, power supply 18 that supplies power is provided, which connects via a switch 17 with the

circuits of long-distance transmitting unit 11, short-distance receiving unit 12 and short-distance transmitting unit 13, etc., and moreover, a transmission antenna 16 is provided at the long-distance transmitting unit 11 of the circuit, which can make the electrical wave to be sent farther away. With reference to Fig. 2, this transmitter 10 is provided with a caved-in card placement slot 14 at the bottom side of the exterior of the casing, and a spring clamp 15 is provided extending inwards at the edge side of the card placement slot 14, and the end of this spring clamp 15 presses against the bottom surface of the card placement slot 14 for securing the sensing card 20 by clamping.

With reference to Fig. 1, Fig, 2 and Fig. 3, when this utility model is in use, the original sensing card 20 is placed in the card placement slot 14 of the transmitter 10, its power supply switch 17 is pressed down, its short-distance transmitting unit 13 is made to transmit a radio wave of a specific frequency to the sensing card 20, and the integrated circuit IC inside the sensing card 20 then sends out an identification code, and after the short-distance receiving unit 12 of the transmitter 10 receives the identification code, a radio frequency wave of another higher frequency is simultaneously carried in, which is transmitted by the long-distance transmitting unit 11, and even the receiver 30 (card reader) installed at a relatively long distance (e.g., 10 meters) can still receive the identification code of this sensing card 20 and start the admission system.

As this utility model has specially ingenious conception, it thus has the following merits for use:

1. This utility model uses radio frequency principle, and has only to use very low transmission power to be able to easily extend the effective distance to over 10 m, which is more convenient and safe for use.

2. This utility model directly reads the inner code of a sensing card and then re-transmits it, and hence retains the characteristic that the code of the original integrated circuit cannot be copied, and is the best embodiment that is most direct, convenient and saves cost.

3. After using this utility model, the original short-distance sensing admission system can be used as a long-distance sensing admission system. Then the original sensing cards need not be changed, and moreover, in different cases no matter in the office or underground car park, etc., the same system can be used, making it not a burden in purchase cost; while in use, as it is not necessary to separately purchase a long-distance sensing admission system, which makes the personnel only using the same sensing card can use it at various locations in conjunction with this utility model, which is more convenient than the conventional manners.

4. The manner that this utility model couples with a sensing card is not restricted by direction. It can be used no matter it is upright, reverse, front or back, which is extremely convenient.

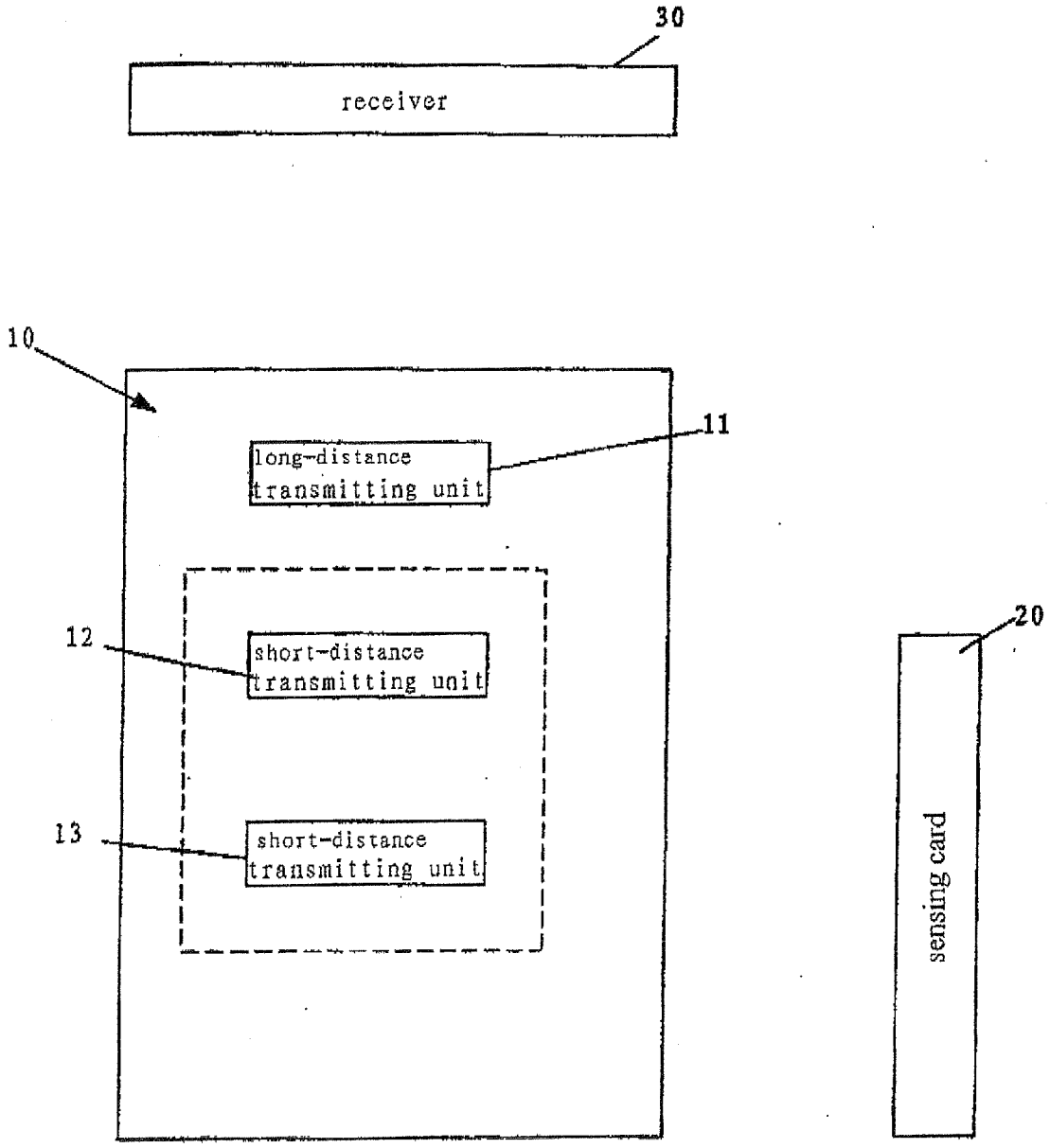

30
receiver
10
11
long-distance transmitting unit
12
short-distance transmitting unit
13
short-distance transmitting unit
20
sensing card

Fig. 1

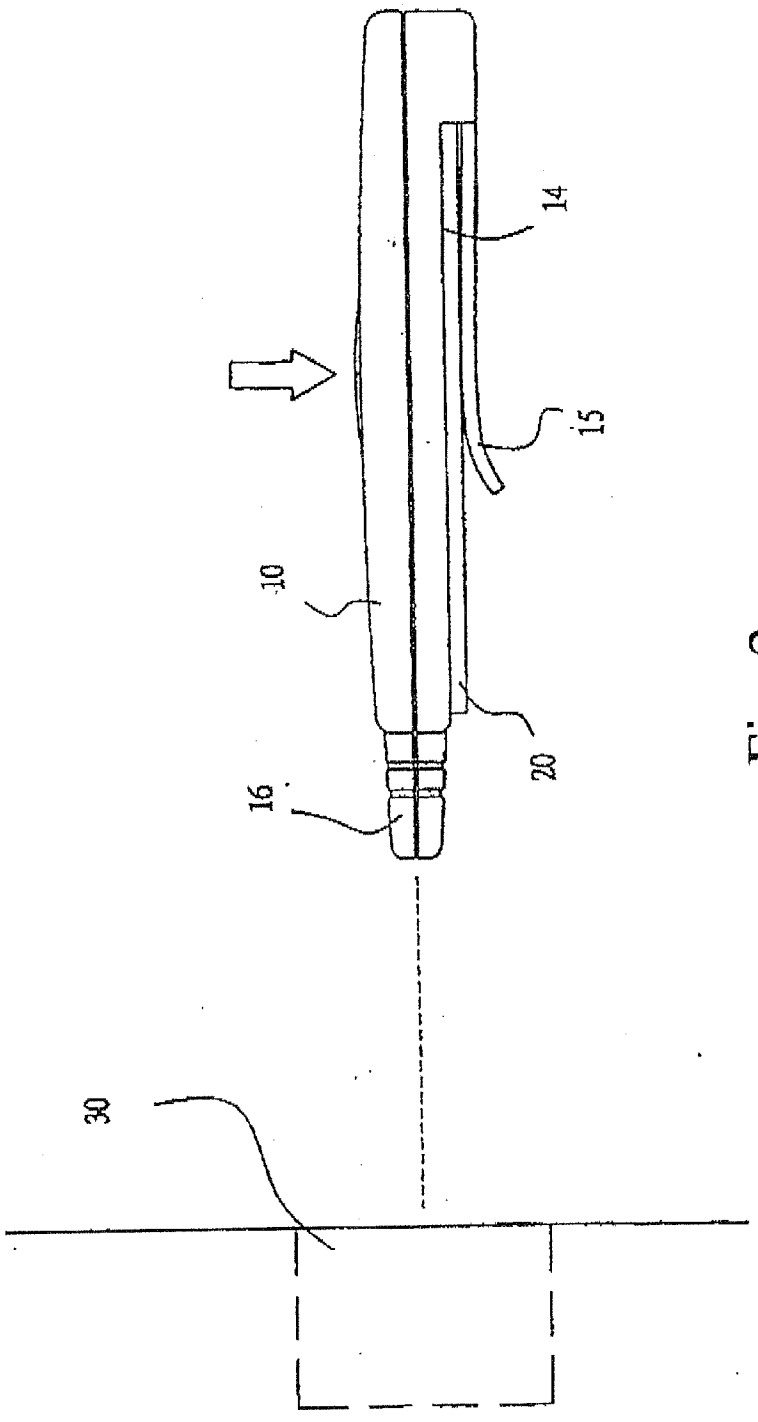


Fig. 2

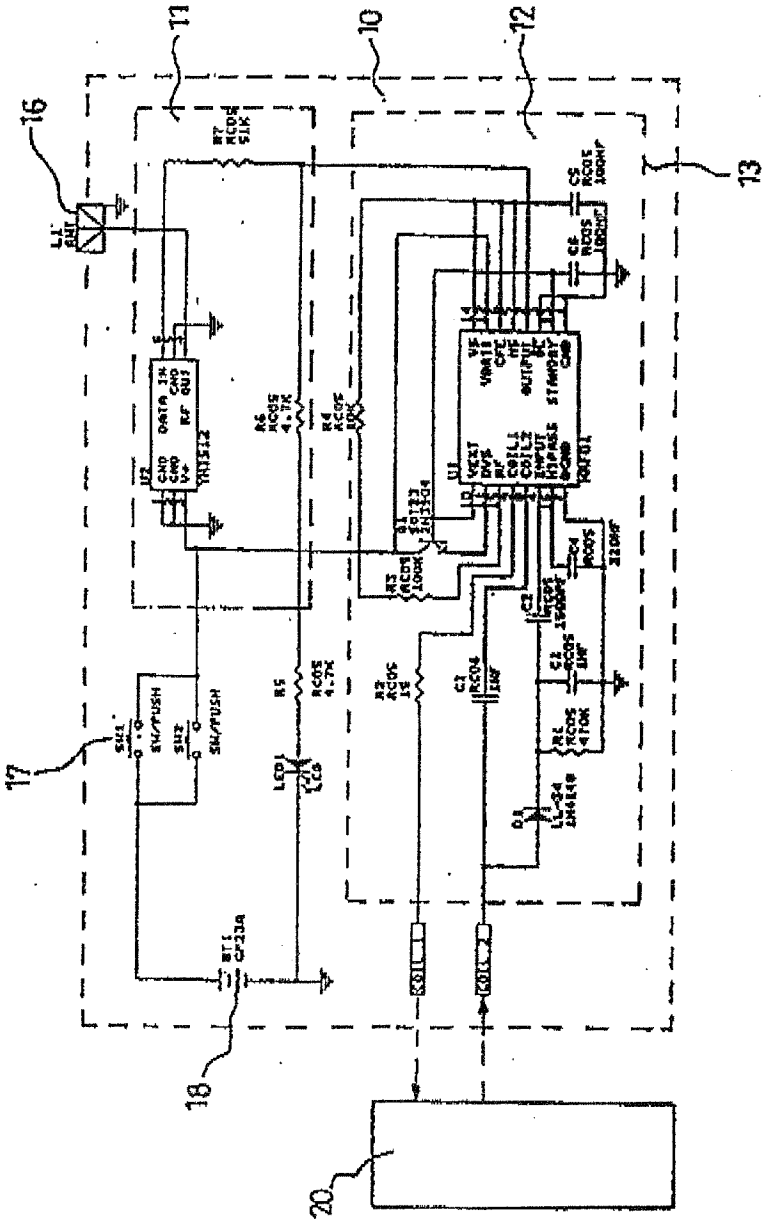


Fig. 3